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09/822,062	03/30/2001	Akira Ishibashi	09792909-4823	1478

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EXAMINER

KIM, RICHARD H

ART UNIT	PAPER NUMBER
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2871

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/822,062	Applicant(s) ISHIBASHI, AKIRA	
	Examiner Richard H Kim	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-21 and 37 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,3,16-21 and 37 is/are rejected.
- 7) ☒ Claim(s) 4-15 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kiryushev et al. (US 5,962,967)

Referring to claims 1 and 37, Kiryushev et al. discloses a device and method wherein paths of photons are provided by a plurality of first optical fiber and a plurality of second optical fibers or waveguides that are disposed in a form of a grating in a two-dimensional plane (see Fig. 2, ref. 22, 24), the second optical fibers or optical waveguides contacting a partially surrounding a length of an arc of an outer circumferences of the first optical fiber at an intersection thereof (see Fig. 5, ref. 22, 24). It is clearly shown in Fig. 5, ref. 22 and 24, that the contacting area is a length of an arc. However, the reference does not disclose that the photon beam introduced into a selected one of the first optical fibers is divided at the intersection to create a dual signal correlated to each other, one of the dual signals being transmitted through within the selected first optical fiber, the other of the dual signal being led out from the selected first optical fiber externally of the two-dimensional plane at the intersection.

It would have obvious to one having ordinary skill in the art at the time the invention was made to divide the photon beam introduced into a selected one of the first optical fibers at the intersection to create a dual signal correlated to each other, one of the dual signals being

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transmitted through within the selected first optical fiber, the other of the dual signal being led out from the selected first optical fiber externally of the two-dimensional plane at the intersection since without a certain degree of division of the photon beam, creating a dual signal correlated to each other, the screen would essentially be dark to the viewer. And since the purpose of the display screen is to create an illuminated display, such a modification would be obvious in order to illuminate the display. According to Kiruyshev et al. "The close arrangement of fibers 22 and 24 is selected such that junctions 26 are close enough to one another, so that by controlling the luminesivity of specific junctions by electric fields provided via element 28, an image of adequate resolution can be perceived by the viewer" (see col. 5, 4-8). The viewer would not perceive the image if portions of the photon beam were not led out externally to the eye of the perceiver, since the screen would essentially be dark.

Referring to claim 3, Kiruyshev et al. discloses the device previously recited. However, the reference does not disclose that the other of the duals signals being led out from the selected first optical fiber externally of the two-dimensional plane and again introduced into the selected first optical fiber via a selected on of the plurality of second optical fibers or optical waveguides to join with the one of the dual signals.

It would have been obvious to one having ordinary skill in the art at the time the invention was made for the other of the duals signals being led out from the selected first optical fiber externally of the two-dimensional plane and again introduced into the selected first optical fiber via a selected on of the plurality of second optical fibers or optical waveguides to join with the one of the dual signals since although part of the dual signal would be led out externally, a portion of the signal would also be again introduced to the first optical fiber since the signal

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would be subject to internal reflection due to a change in medium of the signal from the first optical fiber to the second optical fiber. Therefore, such a limitation would obviously follow.

3. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kiruyshev et al. in view of Nishimura et al. (US 4,640,592).

Kiruyshev et al. discloses the device previously recited. However, the reference does not disclose that an optical switch is used to lead out the other of the dual signals externally of the two-dimensional plane.

Nishimura et al. discloses an optical switch used to lead out the other of the dual signals externally of the two-dimensional plane (see Fig. 4, ref. 6).

It would have been obvious to one having ordinary skill in the art at the time the invention was made for an optical switch to be used to lead out the other of the dual signals externally of the two-dimensional plane in order to create a more defined area in which the other of the dual signals is led out. Therefore, brighter points of illumination can be created, producing a more illuminated display allowing for a brighter image with improved resolution (see col. 1, lines 47-49).

4. Claims 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kiryushev et al. in view of Anvekar (US 6,333,735 B1).

Referring to claim 17-18, Kiryushev et al. discloses a device wherein paths of photons are provided by a plurality of first optical fiber and a plurality of second optical fibers or

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waveguides that are disposed in a form of a grating in a two-dimensional plane (see Fig. 2, ref. 22, 24), the second optical fibers or optical waveguides contacting along and partially surrounding a length of an arc of an outer circumferences of the first optical fiber at an intersection thereof (see Fig. 5, ref. 22, 24). However, the reference does not disclose a light source of a plurality of light sources and a photo detector of a plurality of photo detectors disposed at one and the other ends of each of the first optical fibers, a photon beam introduced from the light source into a selected one of the plurality of first optical first being divided at the intersection of the first optical fiber and the second optical fiber or optical waveguides by an optical switch using light-to-light interaction to create duals signals correlated to each other, one of which dual signals is a first signal transmitted through within the selected first optical fiber, and the other of which dual signal is a second signal led out from the selected first optical fiber externally on the two-dimensional plane, the first signal led out from the other end of the selected first optical fiber being detected by one of the photo detectors, wherein the light source is a semiconductor laser.

Anvekar discloses a light source of a plurality of light sources (see Fig. 1, ref. 11, 12) and a photo detectors of a plurality of photodetectors disposed at one and the other ends of each of the optical display (see Fig. 1, ref. 12-14), a photon beam introduced from the light source being detected by one of the photo detectors (see Fig. 1, ref. 13,14), wherein the light source is a semiconductor laser (see Fig. 10a).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to introduce a photon beam from the light source into a selected one of the plurality of first optical first being divided at the intersection of the first optical fiber and the

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second optical fiber or optical waveguides by an optical switch using light-to-light interaction to create dual signals correlated to each other, one of which dual signals is a first signal transmitted through within the selected first optical fiber, and the other of which dual signal is a second signal led out from the selected first optical fiber externally on the two-dimensional plane since without a certain degree of division of the photon beam, creating a dual signal correlated to each other, the screen would essentially be dark to the viewer. And since the purpose of the display screen is to create an illuminated display, such a modification would be obvious.

According to Kiruyshev et al. "The close arrangement of fibers 22 and 24 is selected such that junctions 26 are close enough to one another, so that by controlling the luminesivity of the specific junctions 26 by electric fields provided via element 28, an image of adequate resolution can be perceived by the viewer" (see col. 5, 4-8). The viewer would not perceive the image if portions of the photon beam was not led out externally to the eye of the perceiver, since the screen would essentially be dark. Moreover, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the signal be detected by one of the photo detectors in order to improve the sensitivity of the device. According to Anvekar, such a modification allows the display to determine where the screen was touched (see col. 2, lines 46-55).

Referring to claims 19 and 20, Kiryushev et al. and Anvekar disclose the device previously recited. However, the references do not disclose that the first optical fibers includes those for red, green and blue, a light source for red emission being provided at one end of each of the first optical fibers for red, a light source for green emission being provided at one end of each of the first optical fibers for green, and a light source for blue emission being provided at one end

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of each of the first optical fibers for blue, wherein the source of emissions are semiconductor lasers.

Anvekar discloses semiconductor lasers as the source of emissions (see Fig. 10A).

It would have been obvious to one having ordinary skill in the art at the time the invention was made for the first optical fiber to include those for red, green and blue, a light source for red emission being provided at one end of each of the first optical fibers for red, a light source for green emission being provided at one end of each of the first optical fibers for green, and a light source for blue emission being provided at one end of each of the first optical fibers for blue, wherein the source of emissions are semiconductor lasers in order to improve the quality of the display by providing a fully colored display. Moreover, using colors of red, green and blue are commonly known in the art to develop a full color display since it is known that all colors can be made by mixing in combination the colors of red, green and blue. Further using semiconductor lasers as a source of light emission, introduces photon beam into the optical fibers. Such a modification would be functionally equivalent.

Referring to claim 21, Kiryushev et al. discloses a device wherein the first and second optical fibers or waveguides are disposed to form a curved plane (see Fig. 1).

Allowable Subject Matter

5. Claims 4-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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6. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record, taken alone or in combination, fails to teach or disclose a photon operating device wherein one of the dual signals, which is an inversion signal of the other of the dual signals led out externally of the two-dimensional plane, is stored in storage means synchronously with leading out the other of the duals signals externally of the two-dimensional plane. Claims 5-15 are objected to solely on their dependency of claim 4.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard H Kim whose telephone number is (703)305-4791. The examiner can normally be reached on 9:00-6:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on (703)305-3492. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Richard H Kim
Examiner
Art Unit 2871

RHK

TO ANTON
PRIMARY EXAMINER